Science – Year 4

Honesty	Love	Forgiveness	Respect	Cultural Capital Opportunities
Giving opinions	Caring for the environment Looking after yourself/body e.g. importance of brushing your teeth		Understanding difference of opinions Understanding that we share this planet with other creatures and that we have a duty to care for them	Earth Week

A Love Of Language	Aspirations	Bringing Learning To Life	Emotional Well-Being	Resilience	Valuing our Diversity	Respect and Responsibility
see key skills below Reading: Listening: Speaking: Writing:	Love of different Sciences, Job potentials (electrician, nutritionist etc.)	Hands on learning – physically creating electrical circuits Art/Design and Technology Creative writing Independent Enquires Relevant contexts for learning	Being outside in nature/ exploring the environment for other living creatures	Applying phonics Applying vocabulary in different contexts		Identifying electrical dangers in the house and knowing what to do/not to do around electricity Understanding what is causing climate change and what we can do to help

What will they learn?		In what order?			End points
Key Concepts	Key Skills	Autumn	Spring	Summer	
Sc4/1.1 asking relevant questions and using different types of scientific enquiries to answer them Sc4/1.2 setting up simple practical enquiries, comparative and fair tests	Raise their own relevant questions about the world around them Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of	Electricity Sc4/4.2a identify common appliances that run on electricity Sc4/4.2b construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	Sound Sc4/4.1a identify how sounds are made, associating some of them with something vibrating Sc4/4.1b recognise that vibrations from sounds travel through a medium to the ear	Animals including humans Sc4/2.2a describe the simple functions of the basic parts of the digestive system in humans Sc4/2.2b identify the different types of teeth in	Autumn: Electricity Can name the components in a circuit Can make electric circuits Can control a circuit using a switch Can name some metals that are conductors Can name materials that are insulators

Sc4/1.3 making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Sc4/1.4 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Sc4/1.5 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Sc4/1.6 reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Sc4/1.7 using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Sc4/1.8 identifying differences, similarities or changes related to simple	scientific enquiry they might use to answer questions Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up Talk about criteria for grouping, sorting and classifying; and use simple keys Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them Take accurate measurements using standard units Learn how to use a range of (new) equipment, such as data loggers/	Sc4/4.2c identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Sc4/4.2d recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Sc4/4.2e recognise some common conductors and insulators, and associate metals with being good conductors. Challenge your knowledge and misconceptions about electricity by exploring a number of electrical games and devices. Look at different games/toys that use electricity. Discover electrical dangers around the home and create a poster warning others of these dangers. Learn about circuits and how to represent them in proper scientific diagrams. Conduct your own experiment, testing different materials to see	Sc4/4.1c find patterns between the pitch of a sound and features of the object that produced it Sc4/4.1d find patterns between the volume of a sound and the strength of the vibrations that produced it. Sc4/4.1e recognise that sounds get fainter as the distance from the sound source increases Go on a 'sound walk' through the school and begin to think about how sound is made. Explore sound further and investigate vibrations and how sound travels. Investigate pitch and volume by exploring instruments and the different sounds they make. Understand how we hear sounds and begin to consider ways to reduce what we can hear. Plan and conduct an investigation into which material best reduces the sounds we hear. <u>Living things and their Habitats</u>	humans and their simple functions Sc4/2.2c construct and interpret a variety of food chains, identifying producers, predators and prey. Learn about the first stage of the digestive system. Begin to understand the human digestive system. Show off all that you have learnt by becoming a small intestine. Find out what we can learn from a poo! Interpret food chains and discuss the impact of changes to a chain. Dental Experts explain the importance of our teeth in the digestive system. <u>Living things and their Habitats</u> Sc4/2.1a recognise that living things can be grouped in a variety of ways Sc4/2.1b explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Can communicate structures of circuits using drawings which show how the components are connected Use classification evidence to identify that metals are good conductors and non-metals are insulators Can incorporate a switch into a circuit to turn it on and off Can connect a range of different switches identifying the parts that are insulators and conductors Can add a circuit with a switch to a DT project and can demonstrate how it works Can give reasons for choice of materials for making different parts of a switch Can describe how their switch works <u>States of Matter</u> Can create a concept map, including arrows linking the key vocabulary Can name properties of solids, liquids and gases Can give everyday examples of melting and freezing Can give everyday examples of evaporation and condensation Can describe the water cycle

scientific ideas and processes Sc4/1.9 using straightforward scientific evidence to answer questions or to support their findings. Sc4/2.1a recognise that living things can be grouped in a variety of ways Sc4/2.1b explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Sc4/2.1c recognise that environments can change and that this can sometimes pose dangers to living things.	thermometers appropriately Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions	whether or not they complete your circuits. Put your knowledge of circuits on display by building your own circuit. <u>States of Matter</u> Sc4/3.1a compare and group materials together, according to whether they are solids, liquids or gases Sc4/3.1b observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Sc4/3.1c identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Sc4/2.1a recognise that living things can be grouped in a variety of ways Sc4/2.1b explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Sc4/2.1c recognise that environments can change and that this can sometimes pose dangers to living things. Become an expert in the 7 characteristics of a living thing (MRS NERG). Make a poster and explain life processes to younger children. Sort living things in a variety of ways. Take a trip within the local environment, observe habitats and record the	Sc4/2.1c recognise that environments can change and that this can sometimes pose dangers to living things. How has our local environment changed? Consider aspects of your school grounds that have changed and have a class debate about a hypothetical scenario that would bring about environmental change. Who made these changes? Consider natural and man-made changes to the environment. How living things adapt to these changes? Can you design a living thing that could survive all these natural environment changes? What is climate change? Conduct an experiment to investigate how the greenhouse effect works. Use the results to discuss	Can give reasons to justify why something is a solid liquid or gas Can give examples of things that melt/freeze and how their melting points vary From their observations, can give the melting points of some materials Using their data, can explain what affects how quickly a solid melts Can measure temperatures using a thermometer Can explain why there is condensation on the inside the hot water cup but on the outside of the icy water cup From their data, can explain how to speed up or slow down evaporation Can present their learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet

Sc4/2.2a describe the simple functions of the basic parts of the digestive system in humans Sc4/2.2b identify the different types of teeth in humans and their simple functions Sc4/2.2c construct and interpret a variety of food chains, identifying producers, predators and prey. Sc4/3.1a compare and group materials together, according to whether they are solids, liquids or gases Sc4/3.1b observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Sc4/3.1c identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done.	Children begin to investigate the differences between solids and liquids by examining and comparing the properties of sand and water. Children will learn more about the fascinating world of gases. Children will learn about how particles behave in different states, and use a thermometer to make observations as water changes from one state to another. Children begin to learn about the water cycle and begin to understand the terms evaporation and condensation. Children will make it rain in the classroom, as well as take part in a number of other tasks as they learn about the Water Cycle.	different living things you find. Look carefully at features of the living things you found in the local area. Make a branching database to sort and identify the local invertebrates. This can be linked to a mathematics block on statistics and data handling. Use a branching database/dichotomous classification key. Make accurate observational drawings of an invertebrate found in the local environment. Make a group large-scale drawing of an insect. Understand that accurate knowledge of the features of living things is vital to classification. Test your knowledge of classification by playing a game. Write a branching database for a variety of living things. Test your classification key by playing 'Guess Who?' Demonstrate your learning to younger children.	how people are causing climate change. What are some of the impacts to living things if an environment changes? Become an expert on one particular reason for environmental change. Create an information poster about what you have learnt and what people can do to help. Can we make a positive impact to a local environment? Using your knowledge of environments, habitats and food chains, redesign a designated area in order to change it for the better. Let's make a positive change! Put your plans to redesign a particular area into action. Use this task to reflect on the types of actions you could take at home to improve the environment.	<u>Spring:</u> <u>Sound</u> Can identify different objects that make sound Can explain/draw a diagram to show how sound is created through vibrations Can understand what pitch is and how to change it Can demonstrate changes in pitch through different instruments Can give examples of how to reduce sound Can identify/suggest materials which is sound proof different pitches and volumes of sound <u>Living Things and Their Habitats</u> Can name living things living in a range of habitats, giving the key features that helped them to identify them Can give examples of how an environment may change both naturally and due to human impact Can keep a careful record of living things found in different habitats throughout the year (diagrams, tally charts etc.) Can use classification keys to identify unknown plants and animals Can present their learning about changes to the

Sc4/4.1a identify how sounds are made, associating some of them with something vibrating Sc4/4.1b recognise that vibrations from sounds travel through a medium to the ear Sc4/4.1c find patterns between the pitch of a sound and features of the object that produced it Sc4/4.1d find patterns between the volume of a sound and the strength of the vibrations that produced it. Sc4/4.1e recognise that sounds get fainter as the distance from the sound source increases Sc4/4.2a identify common appliances that run on electricity Sc4/4.2b construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Sc4/4.2c identify whether or not a lamp will light in a simple series circuit, based					environment in different ways e.g. campaign video, persuasive letter <u>Summer:</u> <u>Animals Including Humans</u> Can sequence the main parts of the digestive system Can draw the main parts of the digestive system onto a human outline Can describe what happens in each part of the digestive system Can point to the three different types of teeth in their mouth and talk about their shape and what they are used for Can name producers, predators and prey within a habitat Can construct food chains Can use diagrams or a model to describe the journey of food through the body

on whether or not the lamp is part of a complete loop with a battery Sc4/4.2d recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Sc4/4.2e recognise some common conductors and insulators, and associate metals with being good conductors.					explaining what happens in each part. Can record the teeth in their mouth (make a dental record) Can explain the role of the different types of teeth Can explain how the teeth in animal skulls show they are carnivores, herbivores or omnivores. Can create food chains based on research <u>Living Things and Their Habitats</u> Can name living things living in a range of habitats, giving the key features that helped them to identify them Can give examples of how an environment may change both naturally and due to human impact Can keep a careful record of living things found in different habitats throughout the year (diagrams, tally charts etc.) Can use classification keys to identify unknown plants and animals Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter